

VENEZUELA: Creatures in Crisis

Introduction

Venezuela is a country with one of the highest levels of biodiversity and richness in both marine and terrestrial ecosystems. Its 43 national parks make up around 20% of the country's total area. The country is home to 650 types of vegetation, 15,820 species of vascular plants, 27 climate zones, and over 137,000 animal species.

Venezuela is currently facing an economic, political, and humanitarian crisis under the regime of President Nicolás Maduro. According to park advocates, the country's national parks are being abandoned and neglected by the Venezuelan government; the lack of law enforcement has allowed for illicit activities such as illegal mining, deforestation, agriculture, and the building of roads.

In addition to inadequate law enforcement, Venezuela's government park agency, Inparques, is chronically underfunded and understaffed. Personnel is scarce, according to anonymous sources, and many park rangers are living below the poverty line. Tourism is also nonexistent, and NGOs are also no longer providing assistance or research given the volatile political situation.

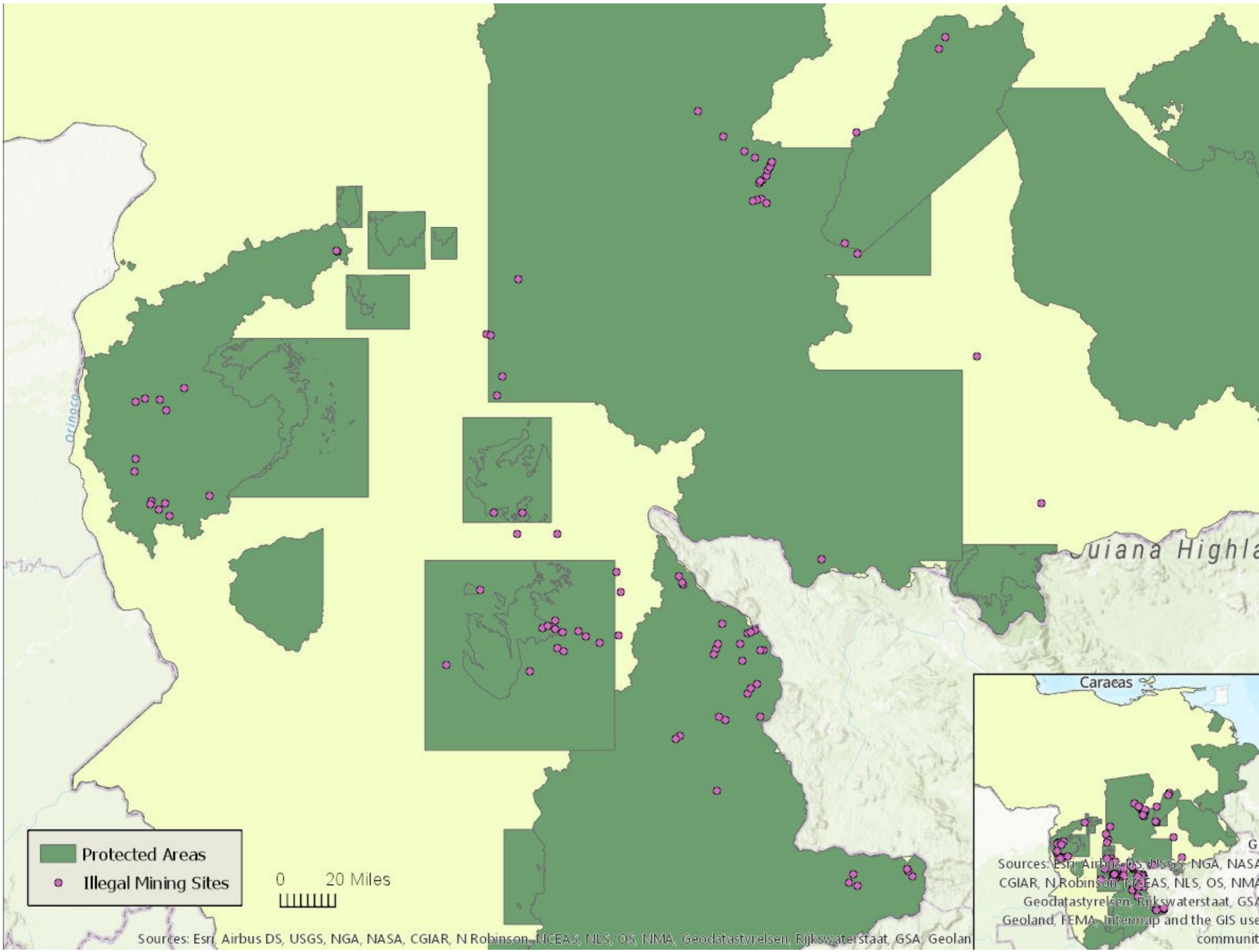
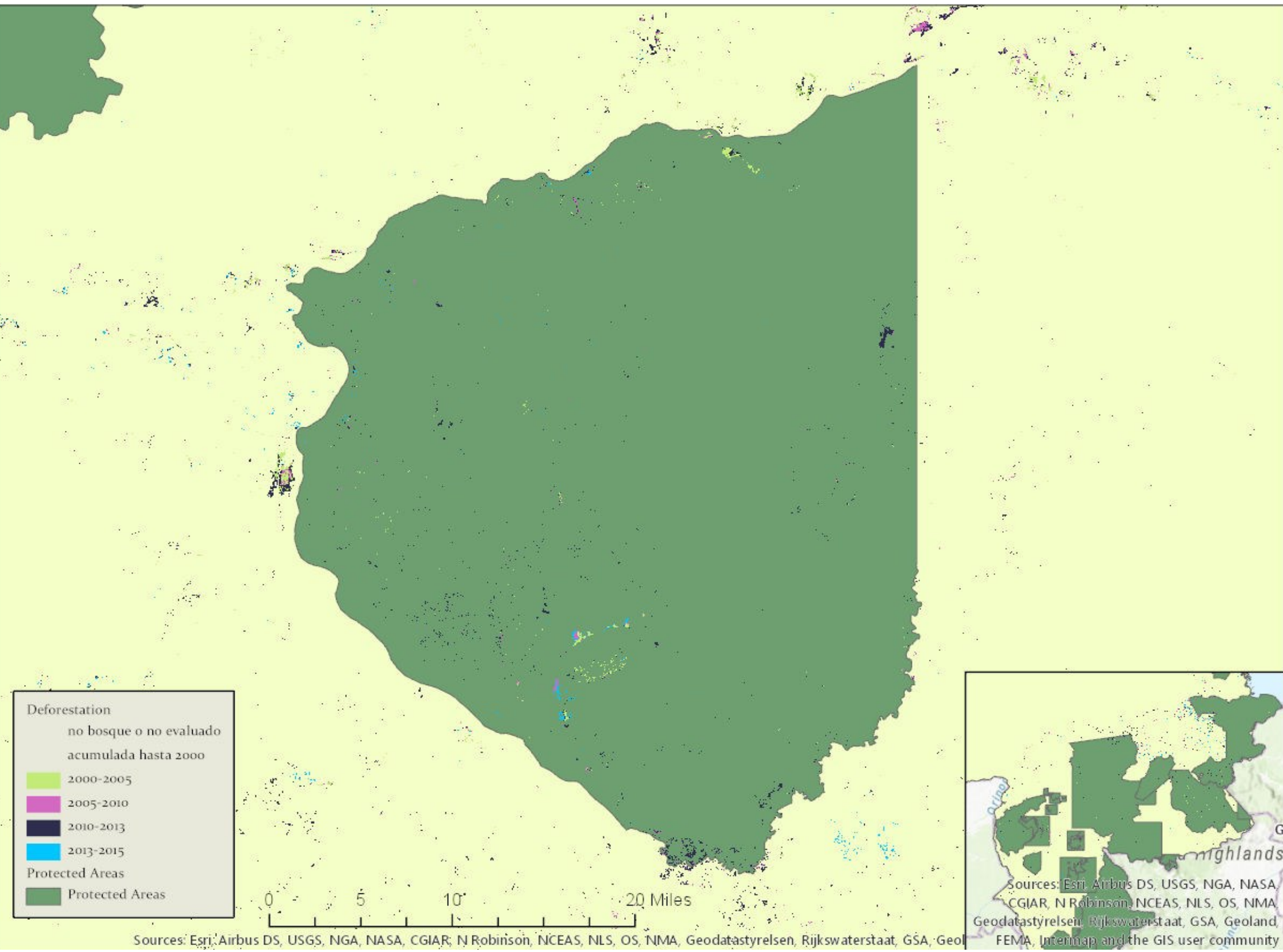
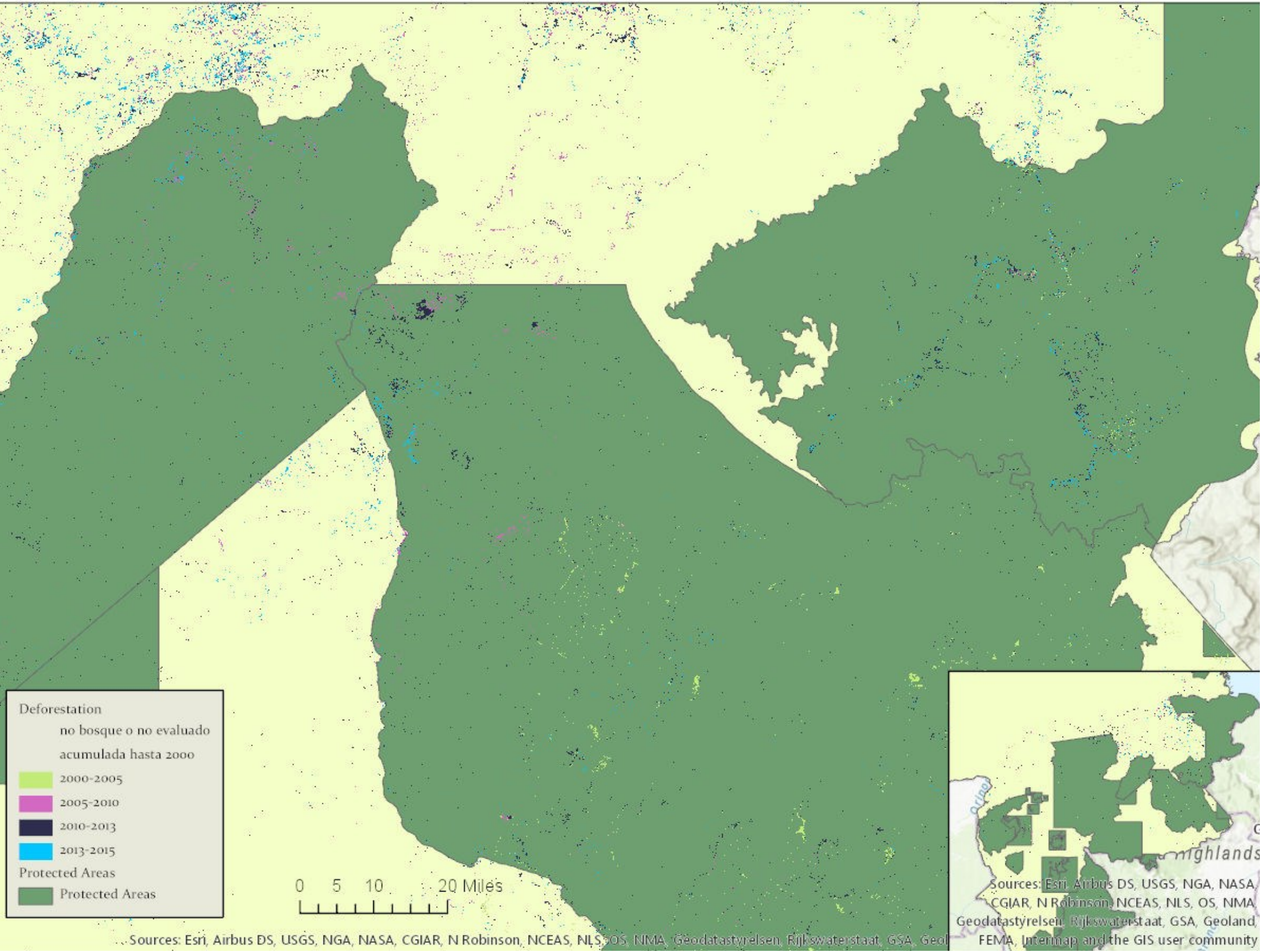
I aim to shed light on whether the state of Venezuela's ecosystems been impacted amidst the country's current state of crisis. I answer the following questions: Has biodiversity declined and are protected areas being maintained? Where and to what extent are mining and deforestation occurring in Venezuela?

Methods & Sources

Spatial data for endemic species ranges, protected areas, illegal mining locations, areas of deforestation, and country boundaries for Venezuela were processed using ArcGIS Pro. Tree cover and biomass loss, as well as threatened species data were graphed using Tableau. IUCN (International Union for Conservation of Nature) Red List data on the threat status of mammal, bird, reptile, and amphibian species endemic to Venezuela was manually searched for on the IUCN website and recorded in Excel.

Data sources:
<https://www.amazoniasocioambiental.org/en/maps/#download>
<https://www.iucnredlist.org/resources/spatial-data-download>
<https://www.globalforestwatch.org/map?map=eyJjZW50ZXliOnsibGF0IjoyNywibG5nIjoxMn0sImJlIjYXJlIjoyfQ%3D%3D>
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ENV170 Environmental Data Visualization
Tufts School of Arts & Sciences



Results

The maps displaying deforestation over time show that deforestation has been occurring in protected areas within Venezuela consistently over the years 2000 to 2015. Tree cover and biomass loss peaked in 2016, followed by a sharp decline in the next two years. Carbon emissions attributed to biomass loss followed the same pattern. Illegal mining is occurring in protected areas as well, as demonstrated in the map above. Finally, the number of threatened species has increased from 219 in 2005 to 328 in 2018.

Discussion

This study shows that activities such as mining and deforestation that are detrimental to the health of protected ecosystems are being carried out in these areas. Yet, tree cover loss has declined since 2016. These results support that there is a lack of protection and adequate management of the country's protected spaces, but may also show a decline in the forestry industry that is part of the greater decline of the country's economy. It must be noted, however, that this study is limited in that it cannot distinguish between the damage caused by mismanagement of national parks and that caused by climate change in general. Data were limited in terms of illegal mining over time.

The increase in threatened species over the course of the 2000s can be attributed both to damage to protected areas and the broader issue of climate change. Species data on their threat category on the ICUN red list were limited, with many species marked as data deficient or not having been assessed since the early 2000s. I was thus unable to calculate the Red List Index number, value that describes the extinction risk of a group of species, for endemic species of Venezuela. More data on the level of threat faced by species in the country and the Amazon in general must be obtained for a more detailed analysis on the state of biodiversity is one of the world's most important ecosystems. Such data collection may not be possible until the country's political turmoil stabilizes.

